Message

From: Griffiths, Rachel [griffiths.rachel@epa.gov]
Sent: 1/31/2017 9:23:20 PM
To: Donovan, Betsy [Donovan.Betsy@epa.gov]
Subject: RE: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Ok good. Thanks!

From: Donovan, Betsy
Sent: Tuesday, January 31, 2017 4:22 PM
To: Griffiths, Rachel <griffiths.rachel@epa.gov>
Subject: RE: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Thanks. This is fine. I will offer a call if he wants some more discussion on the request.

From: Griffiths, Rachel
Sent: Tuesday, January 31, 2017 4:19 PM
To: Donovan, Betsy <Donovan.Betsy@epa.gov>
Cc: Mishkin, Katherine <Mishkin.Katherine@epa.gov>
Subject: RE: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Hey! Sorry this got buried..

I would ask Bill to look at the filtered vs. unfiltered metals results, particularly the frequency of filtered results exceeding the concentration of unfiltered results. Katie and I aren't as well-versed in interpreting these variabilities and want to know if Bill thinks the discrepancies are within an acceptable range/frequency. As far as the results go from a hydro standpoint, they tell me that the filtered and unfiltered concentrations are similar. I guess what I need to know is if the results are reliable, which I think is Bill's area of expertise.

Now that I've said the same vague thing twice, a comment to send to Bill… hm. How about:

There are several occurrences within the groundwater monitoring data where filtered metals concentrations are higher than the unfiltered results. From a data quality perspective, are the discrepancies in filtered vs. unfiltered concentrations within an acceptable range/frequency to be considered reliable? The monitoring point that stood out was MW-1, which shows these discrepancies in at least 3 rounds of sampling, but also occurs elsewhere.

Thanks for the validation update. If Bill can provide some input on this topic, he might also want to see the validation reports (not sure though).

Please let me know if this is sufficient! My mind is running in circles.
Rachel

From: Donovan, Betsy
Sent: Tuesday, January 31, 2017 12:02 PM
To: Griffiths, Rachel <griffiths.rachel@epa.gov>
Subject: RE: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Hi Rachel,

Regarding an EPA QA/QC check on the groundwater filtered v. unfiltered results, could you write up a comment suitable for sending to Bill Sy, so he can look into this issue? Perhaps we need to call him to explain what we need following an email request.

I have requested the data validation report from Geosyntec twice… once by phone message last week and again by email today. I will keep you posted.

NJDEP did not meet the Jan. 27th comment deadline and hopes to get me something early this week.

From: Griffiths, Rachel
Sent: Tuesday, January 24, 2017 4:04 PM
To: Mishkin, Katherine <Mishkin.Katherine@epa.gov>; Donovan, Betsy <Donovan.Betsy@epa.gov>
Cc: Vaughn, Stephanie <Vaughn.Stephanie@epa.gov>
Subject: RE: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Betsy,

My comments are below, and more detail-oriented as Katie mentioned. They seem to be having some issues interpreting the data, such as ignoring results with a "J" qualifier (estimated) which I addressed in my comments. In the groundwater results, some of the filtered results are reported to be higher than the unfiltered (i.e. MW-1 Iron and Manganese results). Some variations like this are to be expected, but we may want to have our QA/QC check it out since it might influence conclusions about site conditions.

On a side note – they didn't submit the data validation reports. Were they sent to you separately?

As always, let me know if you have any questions ☺ As Katie said, I hope we can sit down next week and discuss how this report fits into the bigger picture.

-Rachel

General Comments:

- It is important to note that while the data collected in this effort is meaningful, we should be careful not to oversimplify the interpretation of the results. For example, one downgradient location does not necessarily represent the whole downgradient area, especially given the scale.
- It would add more depth to discussions of contaminant extent if TWP groundwater results were included in the figures. There was a great deal of additional delineation that is ignored by not addressing the TWP results, especially regarding the CFC extent near MW-10/18 and benzene near MW-3.
- EPA concluded in comments on the RI report that delineation of 1,4-dioxane is currently incomplete until samples are collected site-wide and analyzed with the correct lab method (8270 C SIM). This decision should be reflected in this report.
- The report contains several inaccuracies, primarily related to misinterpretation of the "J" laboratory qualifier. The qualifier indicates that concentrations are estimated, not unusable unless the specific results were rejected by the data validator.

Specific Comments:
ES par. 1 and Section 1.1: In the Supplemental GW/MNA Work Plan, Kewanee Industries was included in the list of parties that comprise the "Group." Kewanee is excluded from the "Group" definition in this report. Please verify.
Section 3.1.1 pg 12 par 2: Incorrectly states that VOCs were not detected in the groundwater sample at MW-7. Amend to state that VOCs were detected in the groundwater sample, but results did not exceed NJGWQS.

Section 3.2.3 pg 13 Table, par.3, and others: Several occurrences in the report related to 1,4-dioxane normal and duplicate results at MW-3 from the 2016 sampling event are inconsistent with the lab data tables. The tables cite concentrations of Normal (120 ug/L) and Duplicate (100 ug/L), whereas the text references Normal (110 ug/L) and Duplicate (130 ug/L). Please rectify these discrepancies throughout the report.
Section 3.2.4 pg 14 par.2: Incorrectly states that neither compound [bis(2-chloroethyl) ether at MW-3 and indeno(1,2,3-cd)pyrene at MW-7] was detected in the 2016 samples. Bis(2-chloroethyl) ether was detected in MW-3 at 6ug/L (with J qualifier), but did not exceed its NJGWQS of 7 ug/L.
Section 3.2.5 pg 15: Incorrectly states that no pesticides were detected in either sample [normal or duplicate] from MW-3. Dieldrin was detected in both samples (Normal: 0.016J ug/L, Duplicate 0.018J ug/L) but did not exceed its NJGWQS of 0.03 ug/L.
Section 3.3 pg 15 par.2: incorrectly states that TOC was not detected at upgradient (MW-11) or downgradient (X-3) soil samples. TOC was detected at 590J mg/kg at MW-11.
Section 3.3.1 pg 16: Incorrectly states that no leachable arsenic was present in the soil at all five locations. Table 3-6 indicates that samples at MW-1 (0.007J mg/L) and MW-6 (0.008J mg/L) exceeded "Higher of the health-based leachate criterion or PQL" of 0.003 mg/L.
Section 3.3.1 pg 16 and 4.1 pg 19 par.2: The SPLP concentrations of iron are compared to GWQS since no leachate criterion is available. Why was the result compared to groundwater standards instead of soil standards?
Section 4.1 pg 20 paragraph 2: Remove arsenic from the statement "Aluminum, manganese, and arsenic SPLP concentrations are below their respective NJDEP LC..." since arsenic exceeded the LC at MW-1 and MW-6.
Section 4.1 pg 19 par 2: States that SPLP results for iron and lead are above their respective LC near MW-1. Revise to include arsenic, which also exceeded its LC near MW-1.
Section 4: The conclusions of MNA evaluation in Section 4 should include more specific mechanisms to attribute to natural attenuation.

> **Section 4.2.1 pg 21 par.2:** States that benzene can degrade in aerobic or anaerobic conditions, lists some geochemical parameters, but doesn't come to any conclusions about the processes occurring. Is aerobic degradation occurring?
> **Section 4.2.1 pg 21-22:** The paragraph that discusses 1,4-dioxane attenuation pathways cites aerobic degradation pathways, anerobic biodegradation, and fungus degradation. However, there are no conclusions made about what could be happening to 1,4-dioxane at the site. Are there geochemical parameters that should be included in an analysis? Does the CSIA contribute to any possible conclusions for attenuation mechanisms at the site? Is 1,4-dioxane degrading or dispersing? Is the fungus present? There are several implications in the report that 1,4-dioxane is degrading.

Figure 2-1: Please label the porewater sampling locations to correspond to sample names.
Figure 3-3: Please include a legend showing Leachate Criterion as done in the corresponding Table 3-6.

From: Mishkin, Katherine
Sent: Tuesday, January 24, 2017 3:36 PM
To: Donovan, Betsy <Donovan.Betsy@epa.gov>
Cc: Griffiths, Rachel <griffiths.rachel@epa.gov>; Vaughn, Stephanie <Vaughn.Stephanie@epa.gov>
Subject: FW: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Hi Betsy,

Rachel and I met today to discuss Rolling Knolls and our review of the supplemental GW and baseline MNA investigation report. I'm passing along my comments so you can include them with Rachel's. Just so you know, I return to work full-time Feb 1st so Rachel and I will work on transitioning it back (though she is very welcome to hold on to it if she likes☺).

As you'll see below, my comments are more big-picture since Rachel is getting into the details. We have also requested ORD assistance (at no cost!) to help us understand the SEP data. I can be available for a meeting next week (preferably

Thursday) so we can discuss all our comments and a path forward. Let me know if you have any questions in the meantime. Thanks!

Katie

From: Mishkin, Katherine
Sent: Friday, January 13, 2017 1:47 PM
To: Griffiths, Rachel <griffiths.rachel@epa.gov>
Cc: Metz, Chloe <metz.chloe@epa.gov>
Subject: comments on Rolling Knolls supplemental gw and baseline mna investigation report

Hi Rachel,

Below are some comments on the Supplemental Groundwater and Baseline MNA Investigation Report. It's easy to get lost in the details of this report, I certainly did. But stepping back, it's probably best if we think about the big picture and where we can take the information from this report to make progress toward the FS. Overall, despite some shortcomings they followed up with our recommendations to further discuss how site conditions (geochemical and trend data) support MNA. While the conclusions of this report seem to suggest that MNA could act alone as a remedy, I think this report shows that MNA could be a viable option in combination with some active remedies.

For example, benzene in MW-3 does show a decreasing trend since monitoring was initiated in 2007 but most recently the concentration was 100 ug/L and the NJDEP GWQS is 1 ug/L. In 2007, benzene was 280 ug/L so based on the rate of decline, it is unlikely that we would reach the restoration goal of 1 ug/L within a reasonable timeframe. Thus a likely recommendation in terms of remedies would be to an active remedy (e.g. injection events) to lower the concentration of source material and then allow for MNA in order for remedial goals to be reached within a shorter and more reasonable timeframe.

A similar rationale can be provided for 1,4-dioxane, especially since it is present at elevated levels in the same location as benzene and we could evaluate remedies that could potentially address both contaminants.

For lead in soil and groundwater, the unsaturated and saturated soil as well as groundwater and SPLP data help to show the relationships between the soil and groundwater media and the fate and transport of lead. Of all the metals of concern, it seems that lead has the greatest potential for mobility both because of its greater presence across the site and its geochemical properties (generally mobile in reducing conditions). The report seems to provide an oversimplification that while lead was found to be mobile in the interior of the landfill, that because conditions are less reducing downgradient of the landfill (as deduced by one sample) that once transported to these locations there is a high probability that it would become immobilized in oxidized forms. I have some questions for the site team with this in mind. First, it would be important to collect additional design data to clarify that this phenomenon occurs around the wider perimeter of the landfill boundary rather than what is represented by one sample collected at X-3. However, considering that lead may be mobile within the landfill and immobilized at the boundaries, if we were to move forward with a MNA remedy for metals, wouldn't this only be feasible if it were a containment remedy? Also, a question for the eco and human health risk assessors, wouldn't there still be risk within the landfill (to the critters and if we follow through with residential scenario). Though groundwater data shows lead concentrations are low in filtered data, keep in mind that the majority of the monitoring wells are located along the perimeter and the data support that soils have the potential for ongoing leachability of lead to groundwater. Moving forward, MNA may be feasible for metals if we can develop some hot spot areas for excavation or consolidation to reduce the likelihood of leachability. For example, while MW-7 showed strongly reducing conditions the lead was not leaching from soils at this location most likely from the precipitation of sulfides, and perhaps these conditions could be achieved in areas where lead is showing a higher probability to leach to groundwater.

CFC concentrations do not appear to be an ongoing concern as most recent data show they are well below the groundwater criteria.

See specific comments below and let me know if you have any questions and would like to discuss. Also, note rather than submitting an additional document for review perhaps they could consider some of these comments in subsequent reports.

Specific Comments:

Pg 21/35, Section 3.2.2 VOCs – benzene concentrations in MW-3 are discussed and it is proposed that natural attenuation is occurring and confined to the MW-3 area since MW-15 doesn't show any hits. It would be beneficial if this section also included the temporary well data since that helps to delineate the extent of benzene in groundwater in this area surrounding MW-3. Also, while the trend data does show a clear decrease in benzene concentrations since monitoring was initiated in 2007, it is recommended that if data exist to support geochemical attenuation (e.g. depletion of DO, nitrate, sulfate) that this is discussed and/or that benzene is also likely decreasing due to dilution/dispersion of the chemical and groundwater over time. While benzene is decreasing it should also be noted that the NJDEP GWQS is 1 ug/L. If MNA is carried forward in the feasibility study, it is recommended that a timeframe is provided for the projected time that benzene is expected to reach 1 ug/L based on the rate of depletion over the last 9 years.

Pg 24/35, Section 3.2.3 1,4-dioxane – this section cites an unpublished carbon isotope range that may be indicative of a 1,4-dioxane source. Since MW-10 is heavier than MW-3, they suggest that MW-3 could potentially be degrading but since both are within the source range there are no conclusions that can be drawn. However, given that the carbon isotopes are within the source range at both wells it may be indicative that source is still present and should be considered moving forward. While unclear if they came from the same source that may be better determined during design, but the fact that they could represent source material should be considered in the feasibility study when evaluating potential remedies.

Pg 26/35, Section 3.3.1 SPLP Results – The SPLP concentrations of lead in soil samples collected near MW-6 and MW-1 were above leachate criteria. The fact that filtered lead exceeds groundwater criteria in MW-6 further supports that lead in soil is a source to groundwater in the landfill. The delineation of lead in the landfill is a data gap that can be addressed during the design phase, but the fact that lead exceeds should be considered in the feasibility study when considering potential remedies to address lead contamination in both soil and groundwater.

Pg 29/35, Section 4.1 Evaluation for Metals – While the soil samples help to portray geochemical conditions in different areas in and around the landfill, the conclusions derived may be too simplified to serve as a solid basis for selecting MNA as a sole remedy. The discussion of soil results with respect to MW-6 and that lead was found to be present in the groundwater, saturated soil, able to leach from soil to groundwater, and mobile is barely addressed and appears to be discounted based on the results found at downgradient location X-3.

The text states, "The soil results for the sample collected near well MW-6 are more similar to soil near well MW-1 than to soil near MW-7, suggesting the source of metals in soil may be limited in extent, and that metals that are immobilized under the reducing MW-7 conditions are not being transported downgradient, other than to a very minor extent." While this statement is accurate with respect to sequestration processes occurring at MW-7, given the size of the landfill and the fate and transport of metals in groundwater, it should be noted there are likely different sources of metal contamination impacting the soil/groundwater represented by MW-7 and MW-1/MW-6, and perhaps different sources impacting MW-1 and MW-6 as well.
Lead was detected in saturated soil samples at MW-6 and MW-1 and exceeded the leachate criteria at both locations. On page 20 the SPLP lead detections are discussed and presented as being in the carbonate, non-crystalline, and metal hydroxide fraction as shown in the SEP analyses. It is mentioned that the reducing conditions in the middle of the landfill would enable the mobilization of lead, but indicates that conditions represented by X-3 (>2000 ft downgradient of MW-6) would lead to immobilization and stabilization of lead.

Table 3-6 – Unclear why the metals soil concentrations are not being compared to applicable soil criteria but instead only being reported as detected concentrations.

Katie

Katherine Ryan Mishkin
Geologist
Superfund Technical Support Section
U.S. EPA Region 2
290 Broadway, 18th Floor
New York, NY 10007
(p) 212-637-4449
(f) 212-637-4439